

ATOMIC ENERGY *newsletter*

THE FIRST AND ONLY ATOMIC NEWS SERVICE

ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Now under active consideration by Washington fiscal chiefs are possible reductions in atomic energy spending for projects of the USAEC. A preliminary survey showed that some \$500 million to \$700 million could be eliminated from the USAEC's 1954 projected budget of \$2.043 billion. This, however, might jeopardize completion of the USAEC's uranium-235 producer plant, now being constructed at Piketon, Ohio (page 2 this LETTER) cost of which is estimated at \$1.2 billion. Such cuts would, of course, be reviewed by Lewis L. Strauss, President Eisenhower's assistant for atomic energy.

The problem of protection of air crews during the delivery of nuclear weapons, and the subsequent decontamination of equipment, and continued progress on nuclear powered aircraft marked work done by the U. S. Air Force during 1952, a survey of USAF accomplishments now shows. In the latter project, Consolidated Vultee is concerned with airframe development; General Electric with the nuclear reactor proper; and Boeing (with Pratt & Whitney), the application of nuclear power plants to aircraft. Other USAF-sponsored projects include a University of Rochester investigation of the amount of radioactivity on vehicles and persons that would travel near the top or above the earth's atmosphere.

A conference on nuclear engineering, at the University of Calif., Berkeley, Sept. 9-11, 1953, will, it is expected, cover technical and engineering-economic studies of nuclear power plants, other reactors, isotope production and separation, and isotope applications. The Conference has accordingly invited the presentation of papers on design, construction, and operation of nuclear process systems; translation of physical, chemical, and biological information into engineering design criteria; and special problems and methods for their solution, including research and development techniques of an engineering nature. Persons wishing to present papers may obtain details from R. A. Fayram, 208 Mechanics Bldg., U. of Calif., Berkeley 4, Calif.

Almost doubling of its 1952 business, as compared with its 1951 volume, is now reported by L. W. Cronkhite, president, Atomic Instrument Company, Cambridge, Mass. Indicative of the growth of Atomic, one of the pioneer manufacturers of instruments and devices for nuclear work and applications, is that continual gains have been registered by the firm each year since its formation in 1947; the company's 1952 net sales were approximately 11 times its 1947 business.

The fourth and fifth detonations of the current series of tests of nuclear devices took place at the USAEC's proving ground near Las Vegas, Nev., during the last fortnight. In the fourth test (April 6) the detonation took place some 5,000-feet above the target area. This was a record altitude for its use or tests of such blasts. High level air traffic was prohibited over a 100,000-sq. mile area, because of the radiation potential of the blast. The fifth test (April 11) was set off atop a 100-ft. steel tower at the testing site.

BUSINESS NEWS...in the nuclear energy field...

CHANGES IN ATOMIC ENERGY ACT IMMINENT: A new statement of national nuclear energy power policy, formulated by the USAEC during the past months, and which has been approved by President Eisenhower and the National Security Council, will be submitted to the Joint Congressional Committee on Atomic Energy within the next few weeks. The program will request two fundamental changes in the present Atomic Energy Act of 1946: (1) The USAEC would be authorized to sell, lease, or lend fissionable material to private concerns, under certain security and safety regulations, and (2) Private concerns would be authorized to design, construct, and operate nuclear reactors to produce power. If approved by Congress, this would be of greatest benefit to those private utilities and chemical companies which have been conferring with USAEC engineers on the development of nuclear reactors for power.

NUCLEAR PROGRESS OUTLINED: Walter L. Cisler, president of Detroit Edison Co. (one of the firms mentioned above which is now exploring nuclear power potentialities) told the American Management Association last week in New York that progress in the use of nuclear energy for generating power has been more rapid than expected. The time has come, he said, when definite, full-scale commercial applications of nuclear fuels must be considered and undertaken. He advocated legislation (as above) to expedite these applications.

SUBSTANTIAL CONTRACT AWARD MADE: A \$30 million sub-contract has now been given George Koch Sons', Inc., Evansville, Ind., for sheet metal work on the USAEC's new gaseous diffusion plant (for production of uranium-235) now being built at Piketon, Ohio. The sub-contract was awarded by Peter Kiewit Sons' Co., on a cost-plus-fixed-fee basis. Kiewit is the general construction contractor for the project. The work which Koch will do will take about 4-years to complete, and includes the installation of all sheet metal and allied work on the project, such as heat and ventilation systems, process and pipe enclosures, and other work of a like nature.

NEW LABORATORY NOW IN OPERATION: Operated by the American Cyanamid Company under a prime USAEC contract, a new USAEC laboratory, in Winchester, Mass., is now in full operation. Primary objective of this laboratory is the development and improvement of processes for the recovery of uranium from its ores. One of its functions will be to develop methods for effective and economical recovery of uranium from lowgrade ores and other low grade uranium bearing materials. (The laboratory had originally been started at Watertown Arsenal, in 1945, under the direction of Dr. A. M. Gaudin, Prof. of mineral engineering, at M.I.T. At that time, the contract with the USAEC was with M.I.T. When eventually the operations of the laboratory had so expanded that they resembled the development functions of regular commercial metallurgical testing facilities, the contract was transferred from M.I.T. to American Cyanamid. This was in 1950, and the operations continued at Watertown until December, 1952.)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work..

A radioactive waste disposal service, which provides specially designed waste disposal containers for radioisotope laboratories, and which periodically removes these containers, replacing them with new ones, is now functioning in the East. The service is at present taking care of the needs of practically all industrial long half-life radioisotope users within a 150-mile radius of New York City. Disposal techniques are said to be in rigid conformity with USAEC recommendations.--Radio-logical Service Co., Inc., Jamaica 33, New York.

NOTES: A new-type high-temperature furnace, equipped with quenching facilities, is now being used at Argonne National Laboratory, Chicago, to investigate materials of construction for nuclear reactors operating in the high-temperature range, such as power production reactors. The furnace is a small cylinder, about 18-in. high. The furnace shell, top and bottom, is completely water cooled. Two water-cooled copper electrodes pass through the shell of the furnace. To each electrode is bolted a tantalum plate with a 3/4-in. diameter hole in the center into which a tungsten heater is placed. In operation, the power level is adjusted until the desired maximum temperature is obtained (up to 5,000 deg. F.). After being held at this temperature for the desired period, the specimen can be dropped into a copper crucible cooled with liquid nitrogen (minus 320 deg. F.). Changes that may take place in a ceramic due to high temperature involve hardness, melting point, etc.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES: Additional government offices will now release information on location of surface areas of high radioactivity that have been found by airborne detection instruments. Previously, since July 13, 1952 when the policy began, the information had been posted at USAEC and Geological Survey offices throughout the United States. Now, four additional posting localities will extend the service to Albuquerque, N.M.; Douglas, Wyoming; Phoenix, Arizona; and Ishpeming, Michigan.

CANADA: A group of claims in the St. Mary's Channel area, Lake Athabaska, has been purchased by National Explorations, Ltd. Known as the Soc group, they consist of seven claims located $1\frac{1}{2}$ -miles northeast of the main Gunnar Gold Mines group. The firm advises that prospecting and a scintillometer survey will be started at once. On this company's Pat group, strong radioactivity and mineralization are reported to have been encountered. This property is in the Beaverlodge section, two miles north of the workings of Eldorado's Ace Lake mine.

Information on eight more vertical diamond drill holes in the "A" orebody at Gunnar Gold Mines has been released. They showed ore thicknesses and grade less, on the average, than previous holes. (The average ore thickness in 28 holes to date is 120-ft.) However, there has already been proven, in completed holes, a north-south ore extent of 640-ft., and an east-west ore length of over 300-ft. Drilling is now pushing exploration farther north, and two holes being drilled are in fine ore right at the surface, with the full thickness and grade yet to be learned. Of interest, is the fairly regular distribution of uranium in this orebody. Of more than 1,200 orebody assays (in the "A" ground) to date, only a dozen have run more than 1%. The vast majority are very close to the overall average.

What appears to be a sizable orebody of good grade has been opened up at Rix-Athabasca Uranium Mines by underground work there. While the first 15-ft. were in low grade material, and the last 15-ft. have yet to be sampled, the intervening 85-ft. have averaged 0.33% uranium oxide from muck samples, with channel samples averaging 0.41% across 8.8-ft., the company reports.

A contract for a minimum of 5,000-ft. of diamond drilling has been let and work started on the Long Twp. property in the Sault Ste. Marie area of Peach Uranium and Metal Mining, the company reports. The first hole is being put down to test the contact between sediments and granite along which a mineralized zone carrying uranium, thorium, and gold values has been found, and is located directly below No. 1 surface trench where good radioactivity was noted in prospecting, the firm states.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water. This first official published report of the Sub-committee on Permissible Internal Dose of the National Committee on Radiation Protection gives the most acceptable values of maximum permissible amounts of the various radioisotopes in the human body and in air and water. The report considers about 70 radioisotopes that are of present-day interest. (Other radioisotopes are to be treated in subsequent reports as data becomes available to serve as a basis for recommended values. And the values given in this report are to be revised from time to time as more biological information is obtained.) National Bureau of Standards Handbook 52, 45 pages.--Superintendent of Documents, Wash. 25, D. C. (20¢)

Device for transforming nuclear energy into another form of energy. A translation of Swiss patent number 233278. English version available from Library of Congress, Publication Board Project, Wash. 25, D.C., as no. PB-107449. (Microfilm: \$1.25; Photostat: \$1.25)

Distribution of Uranium in Rich Phosphate Beds of the Phosphoria Formation. Work done by the Geological Survey for the USAEC. 45 pages.--Superintendent of Documents, Wash. 25, D. C. (15¢)

Beta Ray Thickness Gauges. (NRC report no. 2358).--Simple Radiometer for the Measurement of High Intensities of Soft X-Rays. (NRC report no. 2434).--The first report describes an experimental thickness gauge, and principles underlying its operation; the latter report describes a simple non-electronic "thermocouple radiometer" to measure X-ray intensities. --National Research Council of Canada, Chalk River, Ontario, Canada (Each report: 15¢)

Atomic Industrial Forum, Inc.: A Special Report, for readers of this LETTER, on this Forum which the editorial staff considers an important move ahead toward industrial nuclear energy.

Atomic Industrial Forum, Inc., organized by a group of industrialists and educators, described its aims and objectives in New York last week. (Directors of the forum are: A. L. Baker, chairman, Vitro Corp., and Vitro Man. Co.; W. L. Cisler, president, Detroit Edison Co.; J. L. Collyer, president, B. F. Goodrich Co.; T. K. Glenman, president, Case Institute of Technology; F. L. Hovde, president, Purdue University; A. Iddles, president, Babcock & Wilcox Co.; J. A. Martino, president, National Lead Co.; J. R. Menke, president, Nuclear Development Assoc.; E. W. Mills, president, Foster-Wheeler Corp.; M. E. Putnam, vice-president, Dow Chemical Co.; R. W. Thomas, vice-president, Phillips Petroleum Co.; H. G. Vesper, vice-president, Standard Oil Co. of Calif.; J. B. Woodward, Jr., president, Newport News Shipbuilding & Drydock Co.)

As explained to this LETTER, the forum will: Foster and encourage development and utilization of atomic energy; provide the public with information on nuclear projects; advise industry on its nuclear energy problems; and encourage nuclear research. Offices are to be maintained by the Forum in the Engineering Societies building, in New York. An active working staff will ultimately be formed, according to Mr. Cisler (Detroit Edison Co.) He said some of this staff will be concerned with technical and engineering matters; others with legal aspects; some with economic and commercial problems; and still others with management affairs.

Mr. Cisler emphasized that it is necessary to bring together in one place such information "so that there can be an advancement of understanding of the technical, the legal, the economic, and the managerial problems which are involved" (in nuclear energy). Membership dues will finance the operation.

Primary concern will be with economic industrial power from nuclear energy, because, as Dr. Menke (Nuclear Development Assoc.) explained, "power has such stature" compared with other industrial areas in which nuclear energy may be utilized.

However, other areas of nuclear energy potentialities to which attention will be paid include (Dr. Menke stated) the use of radiations in all manners. These include uses in sterilization, to promote chemical reactions, and in medical therapy, Dr. Menke pointed out that in human values, such uses of radiation are very high. But as a business, he noted that power overshadows them to an extreme degree. This was re-emphasized by Dr. J. R. Dunning (Columbia University), who had an active part in the formation of the Forum. Dr. Dunning stated that isotope and tracer business "is very useful and desirable, but from an economic standpoint at present, unless someone discovers a great deal more usefulness than at present, they are pretty small compared to the power end" of nuclear energy.

Mr. Baker (Vitro Corp.) noted that while "the application to cancer technique (of radioisotopes and ionizing radiations) is terribly important, the number of dollars to be made from the manufacture of those machines is small compared to a power plant". This was amplified by Dr. Dunning, who pointed out that "the amount of energy in the radioactive fission products is small (compared) to the total energy of the fission. The fission power generated immediately is between 50 and 100 times greater than anything you would have left in any fission energy residual".

The question of how secrecy can be maintained in economic industrial nuclear energy use was outlined by Mr. Baker. He said that the best way to "keep (intact) the United States' secrets in atomic energy is by having the broadest possible participation by industry." (Mr. Baker quoted a security officer on the Manhattan project as having said that "security is just a matter of slowing up leaks". Further, Mr. Baker said, "you just can't keep a secret. You can't do it".) Dr. Dunning elaborated on this by observing that "in the long run, real long-term security is always more enhanced by progress than by any other thing." He said that "progress is far more the basis for security than secrecy, and this is recognized by the government".

Mr. Baker also observed that while the first plant generating electricity using nuclear energy may not be an economic success from the usual industrial standard, it could be built within "a commercial engineering job term of 2 to 5 years". Within 10 years, a commercially feasible plant could be in operation, he noted.

NUCLEAR ENERGY WORK ABROAD...news & notes...

Great Britain-Discussing fluorine chemistry, and its importance in nuclear energy work, Sir Christopher Hinton, Deputy Controller of Atomic Energy (Production), mentioned that fluorine handling is one of the important considerations in building the chemical plants associated with production of nuclear energy. Sir Christopher was addressing the Institute of Metals last month in London. He lamented the fact that in Britain today the only suitable material for handling fluorine is graphite. At the present time, he stated, more than half the nuclear energy effort lies in the associated chemical plants, but he opined that in due course the situation will be reversed, and more effort will be expended in connection with the nuclear reactors themselves. Concerning other metals, Sir Christopher observed that although aluminum and magnesium have been used in the British thermal nuclear reactors to date, neither is an ideal material if the reactor is used for industrial power. A low neutron absorption tendency, freedom from non-metal inclusions, and a relatively high melting point are required, he said. Beryllium and zirconium are being investigated for this application, he pointed out. In a fast nuclear reactor, where the fuel is rich in fissionable atoms, a moderator is not used to slow the neutrons. Here, he observed large amounts of heat must be taken away from a small area, and liquid metals such as mercury, sodium, and lead are used as coolants. These conditions have set up rigid requirements for materials of construction, and Sir Christopher noted them as being: high heat conductivity, high creep strength, and simple structure with resistance to corrosion from fuel or coolant.

Italy- Further discussions, of a definitive nature, marked the recent conference in Rome last month under the auspices of the European Council for Nuclear Research, concerning the creation near Geneva of a center for nuclear research. The conference was attended by some fifty-three scientific representatives of twelve European countries, the Council of Europe, and the United Nations (UNESCO). (Purpose of the Geneva research center is to promote collaboration among European countries for such basic research in physics and other fields as exceeds the resources of any single European country. Countries represented are Belgium, Denmark, France, West Germany, Greece, Italy, Norway, The Netherlands, Sweden, Switzerland, and Yugoslavia.)

ATOMIC PATENT DIGEST...latest U. S. grants...

Method of testing for leaks through a weld at one end of a jacketed body. The body is placed in a chamber with the weld uppermost. A liquid is then introduced into the chamber to a level slightly below the weld. Gas pressure is then introduced into the chamber, and the level of the liquid raised so that it is higher than the weld. When the gas pressure is released, if bubbles enter the liquid it is a sign that leaks exist in the weld. U. S. Pat. No. 2,633,740 issued Apr. 7, 1953; assigned to United States of America (USAEC).

High frequency shunt. Comprises (in part) a hollow cylindrical insulator, a pair of end plates secured to this insulator, a thin-walled hollow cylindrical resistor within the insulator, and abutting the end plates, with each of these end plates having identical aligned bosses on the mutually presented faces. U. S. Pat. No. 2,634,307 issued Apr. 7, 1953; assigned to United States of America (USAEC).

Pocket radiation meter. Comprises (in part) a gas tight housing, an ionization chamber mounted within this housing, and a switch mounted within the housing including a pair of contacts, one of these contacts being connected to one of the electrodes of the ionization chamber, and the other contact to the exterior of the housing. U. S. Pat. No. 2,634,374 issued Apr. 7, 1953; assigned to United States of America (USAEC).

Preparation of uranium bromide. Method of preparing uranium bromide which comprises reacting a nitride of uranium at a temperature above about 45 deg. C., with bromide, and recovering uranium bromide. U. S. Pat. No. 2,635,035 issued Apr. 14, 1953; assigned to United States of America (USAEC).

Sincerely,

The Staff
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